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Title: **JP2002524383T2:**Derwent Title: Article for use as a component for a liquid crystal cell comprises a medium and a glass substrate having predetermined concentrations of an alkali metal ion ([Derwent Record](#))Country: **JP** JapanKind: **T2** Publ. unexam. Pat. Appl. based on Internat. Appl. IInventor: **see Assignee**Assignee: **None**Published / Filed: **2002-08-06 / 1999-09-09**Application Number: **JP2000000570116**IPC Code: Advanced: **C03C 17/245; C03C 17/34; C03C 17/36;**
Core: **C03C 17/23;** more...
IPC-7: **C03C 17/34; G02F 1/1333;**ECLA Code: **None**Priority Number: **1998-09-17 US1998000156730**
1999-09-09 WO1999US0020665INPADOC None [Get Now: Family Legal Status Report](#)

Legal Status:

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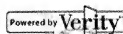
| PDF | Publication | Pub. Date | Filed | Title |
|-----|--------------------------------|------------|------------|--|
| | ZA0101686A | 2002-05-28 | 2001-02-28 | Alkali metal diffusion barrier layer. |
| | WO0015571A1 | 2000-03-23 | 1999-09-09 | ALKALI METAL DIFFUSION BARRIER |
| | US6352755 | 2002-03-05 | 1998-09-17 | Alkali metal diffusion barrier layer |
| | US5830252 | 1998-11-03 | 1996-02-01 | Alkali metal diffusion barrier layer |
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| <input checked="" type="checkbox"/> | GR3029417T3 | 1999-05-28 | 1999-02-17 | |
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| | ES2125542T3 | 1999-03-01 | | |
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| <input checked="" type="checkbox"/> | EP1115670A1 | 2001-07-18 | 1999-09-09 | ALKALI METAL DIFFUSION BARRIER |
| <input checked="" type="checkbox"/> | EP0705801B1 | 1998-12-02 | 1995-09-27 | Alkali metal diffusion barrier layer |
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| <input checked="" type="checkbox"/> | BR9504767A | 1997-09-02 | 1995-10-03 | ARTIGO DE VIDRO REVESTIDO METAL PARA PRODUZIR UM ARTIGO DE VIDRO REVESTIDO E DISPLAY DE CRISTAL |
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| <input checked="" type="checkbox"/> | AU3290695A1 | 1996-04-18 | 1995-09-26 | ALKALI METAL DIFFUSION BARRIER |
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Other Abstract Info:

CHEMABS 132(18)240737H CHEMABS 136(13)204100U DERABS C2000-271340



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Title: **WO0015571A1: ALKALI METAL DIFFUSION BARRIER LAYER**[French]

Derwent Title: Article for use as a component for a liquid crystal cell comprises a medium and a glass substrate having predetermined concentrations of an alkali metal ion [Derwent Record]

Country: **WO** World Intellectual Property Organization (WIPO)Kind: **A1** Publ. of the Int. Appl. with Int. search reportInventor: **FINLEY, James, J.**; 111 Cornwall Drive, Pittsburgh, PA 15238, United States of America
GILLERY, F., Howard; 2790 Indian Spring Lane, Allison Park, PA 15101, United States of AmericaAssignee: **PPG INDUSTRIES OHIO, INC.**, 3800 West 143rd Street, Cleveland, OH 44111, United States of America Corporate Tree data: PPG Industries Inc. (PPGIND);
[News, Profiles, Stocks and More about this company](#)Published / Filed: **2000-03-23 / 1999-09-09**Application Number: **WO1999US0020665**IPC Code: Advanced: **C03C 17/245; C03C 17/34; C03C 17/36;**
Core: **C03C 17/23;** more...
IPC-7: **C03C 17/245; C03C 17/34; C03C 17/36;**ECLA Code: **C03C17/245; C03C17/245B; C03C17/34D2; C03C17/36;**Priority Number: **1998-09-17 US1998000156730**

Abstract: Amorphous metal oxide barrier layers of titanium oxide, zirconium oxide and zinc/tin oxide are effective as alkali metal ion barrier layers at thicknesses below 180 Angstroms. The amorphous metal oxide barrier layers are most effective when the density of the layer is equal to or greater than 75 % of the crystalline density. The barrier layers prevent migration of alkali metal ions such as sodium ions from glass substrates into a medium e.g. electrolyte of a photochromic cell, liquid material of a liquid crystal display device contacting the glass surface and a photocatalytic coating. The properties of the medium, particularly electroconductive metal oxide coatings, are susceptible to deterioration by the presence of sodium ions migrating from the glass. [French]

Attorney, Agent or Firm: **LEPIANE, Donald, C. ;**

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Country: LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD
 SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZA ZW,
 European patent: AT BE CH CY DE DK ES FI FR GB GR IE IT LU
 MC NL PT SE, OAPI patent: BF BJ CF CG CI CM GA GN GW ML
 MR NE SN TD TG, ARIPO patent: GH GM KE LS MW SD SL SZ UG
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| <input checked="" type="checkbox"/> | AU3290695A1 | 1996-04-18 | 1995-09-26 | ALKALI METAL DIFFUSION BARRIER |
| <input checked="" type="checkbox"/> | AU0737886B2 | 2001-09-06 | 1999-09-09 | ALKALI METAL DIFFUSION BARRIER |
| <input checked="" type="checkbox"/> | AU0675193B2 | 1997-01-23 | 1995-09-26 | ALKALI METAL DIFFUSION BARRIER |
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First Claim:

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Description

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WHAT IS CLAIMED IS:

± ALKALI METAL DIFFUSION BARRIER LAYER CONTINUING

APPLICATION INFORMATION This application is a continuation-in-part S application of U.S. Patent Application Serial No. 08/597,543 filed on February 1, 1996, in the names of James J. Finley and F. Howard Gillery which is a continuation-in-part application of U.S. Patent Application Serial No. 08/330,148 filed on October 4, 1994, now abandoned, in the names of James J. Finley and F. Howard Gillery.

± **FIELD OF THE INVENTION** This invention relates to a barrier layer and, more particularly, to a barrier layer to prevent diffusion of alkali metal ions, such as sodium ions, from a glass substrate into a medium e.g. a coating such as an electroconductive coating or a photocatalytic coating.

DISCUSSION OF THE TECHNICAL PROBLEM Alkali metal ions, e.g. sodium ions in glass, particularly at elevated temperatures, migrate from the surface of the glass into the medium overlaying the glass. For example, in liquid crystal display ("LCD") devices similar to the type disclosed in U.S. Patent No. 5,165,972, the sodium ions in the 2S surface of the glass substrate migrate into the liquid crystal material causing deterioration of the liquid crystal material.

± **SUMMARY OF THE INVENTION** The present invention recognizes the desirability of utilizing a thin material as a diffusion barrier for alkali metal ions such as sodium ions. Although the prior art suggests that the refractive index of such a diffusion barrier should match the refractive index of the substrate as closely as possible, thus selecting silica for glass substrates, in accordance with the present invention, very thin layers of metal oxides such as zirconium oxide, titanium oxide and zinc/tin s oxide are produced as effective diffusion barriers for sodium ions without compromising optical properties of the coated glass.


In general the present invention relates to an article having a medium e.g. photocatalytic coating, water reducing coating, electroconductive coating, electrolyte of a photochromic device and/or liquid material of liquid crystal display over and spaced from the surface of a glass substrate.

± **BRIEF DESCRIPTION OF THE FIGURES OF THE DRAWING** Figure 1 is a cross section of a liquid crystal display ("LCD") device incorporating features of the invention.

Figure 2 is a cross section of a glass sheet having 3S the barrier layer of the invention between a photocatalytic composition and a glass substrate.

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References:

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| PDF | Patent | Pub.Date | Inventor | Assignee | Title |
|---|-----------|------------|---------------------|---------------------------------|---|
|  | US6677063 | 2004-01-13 | Finley; James J. | PPG Industries Ohio, Inc. | Methods of obtaining photoac coatings and/or anatase cryst of titanium oxides and articles thereby |

Other Abstract
Info:

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